REMARKS

Reconsideration of this application, as presently amended, is respectfully requested. Claims 1 - 33 are pending in the present application. Claims 4 – 13 and 15 – 33 have been withdrawn from consideration. Claims 1 – 3 and 14 stand rejected. The rejections set forth in the Office Action are respectfully traversed below.

Claims 1 – 3 have been amended to clarify relationships between claim elements.

Claim Rejections – 35 U.S.C. §102

Claims 1 and 14 were rejected under 35 U.S.C §102(e) as being anticipated by **Yano et al.** (USP 6,701,732). For the reasons set forth in detail below, this rejection is respectfully traversed.

The present invention is directed to an apparatus and method wherein live picture information can be efficiently transmitted to a network in a real-time manner. The present invention includes, for example, a transmission control section 15 that receives fame data and outputs packets to a network 16 according to a connection-less type protocol.

The transmission control section 15 may include a transmission packet division section 13 and a packet transmission timing adjustment section 14. The transmission packet division section 13 receives frame data having different sizes from a frame buffer 12 and divides the frame data into packets of such size as to be suited for the Ethernet maximum transfer unit (MTU). For example, the frame data is divided into packets of User Datagram Protocol (UDP) payload size, which can prevent the occurrence of IP fragmentation and can minimize overhead caused by each of the IP and UDP headers for the Ethernet.

Thus, data from a K-th frame may be divided into CK UDP packets by the transmission packet division section 13. The data from the K-th frame, which has been divided in CK packets by the transmission packet division section 13, is transmitted to the network 16 by the packet transmission timing adjustment section 14 during a period *after* the real time encoder 11 writes the K-th frame data to the buffer 12 and *before* the real time encoder 11 outputs the (K + 1)th frame data to the frame buffer 12 (see application specification, e.g., page 13, line 24 – page 14, line 3)

A time TSK (seconds) for which the K-th frame data can be transmitted to the network 16 is given by the formula: $TS_K = TF_K - TW_K$, where TF_K is the frame distance (seconds) between the K-th frame and the (K+1)th frame and TW_K is the time (seconds) for which a real-time encoder 11 writes K-th frame data into the frame buffer 12 (see, e.g., application specification, page 14, lines 11-17 and Fig. 2). The CK UDP packets are transmitted for the time TS_K while arranging the packets equidistantly (see, e.g., application specification, page 14, lines 18-20).

Thus, according to the present invention, the transmission control section 15 *transmits data* to the network during a period between the real time encoder writing K-th frame data and (K+1)th frame data to the buffer 12.

Yano et al. disclose a device for optimizing a data transfer rate between two terminals on a network based on the unarrived data volume between two end terminals. The unarrived data volume is the volume of data that has been output from a transmitting terminal onto a network, but has not been received by a receiving terminal. See, e.g., Abstract and column 4, lines 14-19.

More particularly, **Yano et al.** teaches that a data generator 1-11 at a transmitting terminal 1-1 compresses an image captured by a video camera. The data generated by the data

generator 1-11 is sent to a data transmitter 1-12 which segments the received data into a proper size, assigns sequence numbers to the segmented data, and outputs the segmented data onto a network 1-3. The data transmitter 1-12 adjusts the data size to be segmented and the output interval of the segmented data in accordance with a transmission rate designated by a transmission rate change unit 1-13 (see column 3, lines 7-21).

The transmission rate designated by the transmission rate change unit 1-13 is determined based on the abovementioned *volume of data that has been output from a transmitting terminal onto a network but has not been received by a receiving terminal* (also referred to as the "network buffer data volume"). The network buffer data volume is calculated as set forth in column 4, lines 20-56 of **Yano et al.** based on the packet size and the difference between the sequence number of the last packet output from the transmitting terminal 1-1 and a reception sequence number included in a report sent from the receiving terminal 1-2.

Differences between Yano et al. and claimed invention

Yano et al. do not disclose or suggest the claimed *transmission timing control and transmission means for controlling transmission timing to sequentially transmit packets corresponding to the respective frames to a network, wherein packets corresponding to respective frames are transmitted to the network during a period after said encoder writes real-time encoded data corresponding to a frame to the storage means and before said encoder writes data corresponding to a next frame to the storage means, and for transmitting the packets to the network according to a connection-less type protocol*, as recited in claim 1.

Yano et al. is completely silent with respect to any relationship between an encoder writing data to storage and transmission timing to a network.

In contrast to the claimed invention, **Yano et al.** transmits data to a network at a transmission rate calculated based on *network buffer data volume* (i.e., the volume of data that has been output by the transmitting terminal but has not reached the receiving terminal). **Yano et al.** do not disclose or suggest controlling transmission timing of packets to a network based on *write timing of an encoder*, and, more specifically, transmitting packets to a network after an encoder writes frame data to a storage means and before the encoder writes frame data corresponding to a next frame to the storage means.

In rejecting claim 1, the Office Action cites column 3, line 57 – column 4, line 3 and column 13, lines 38-48 of **Yano et al.** However, the cited portions of **Yano et al.** simply state, for example, "packets are output to the network at *appropriate* intervals" (see column 3, lines 61-62). Neither of the portions cited by the Examiner relate to transmitting packets to the network based on write timing of an encoder.

Method claim 14, which corresponds to apparatus claim 1, is allowable for the same reasons as claim 1

In view of the above remarks, reconsideration and withdrawal of the rejection under §102 are respectfully requested.

Claim rejections - 35 U.S.C. § 103

Claims 2 and 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over **Yano et al.** in view of **Boyce** (USP 6,490,705). For the reasons set forth in detail below, this rejection is respectfully traversed.

Claims 2 and 3 depend from claim 1 and are allowable for all the reasons set forth above with respect to claim 1. More particularly, **Boyce** does not alleviate any of the above-noted deficiencies of **Yano et al.**

Moreover, the Office action states "As to claim 2, **Yano et al.** [teaches] the transmission timing for transmitting the divided packets to the network is determined from an encoded frame interval and a frame data storage time" citing column 13, lines 38-45 of **Yano et al.** (see Office Action page 3, lines 1 and 2).

However, column 13, lines 38-45 of **Yano et al.** is related to a video data generator 1001-11, which includes an image sensing unit and a unit for capturing, compressing and encoding sensed video data (see column 12, lines 30-32). Specifically, column 13, lines 38-45 of **Yano et al.** discusses how the video data generator 1001-11 captures image data and is *unrelated to transmission timing for transmitting divided packets to a network.* Contrary to the Examiner's assertion, **Yano et al.** do not disclose or suggest that the transmission timing for transmitting the packets corresponding to respective frames to the network is determined from an encoded frame interval and a frame data storage time, as recited in claim 2.

Furthermore, the Office action states "As to claim 3, **Yano et al.** [teaches] for transmitting the packets to the network is set so that a transmission time, in seconds, for transmitting the K-th frame data to the network corresponds to a value obtained by subtracting a write time, in seconds, for which said encoder writes the K-th frame data into said storage means, from a frame interval, in seconds, between the K-th frame data and the (K+1)th frame data" again citing column 13, lines 38-45 of **Yano et al.** (see Office Action page 3, lines 8-11).

As noted above, column 13, lines 38-45 of **Yano et al.** is unrelated to transmission timing for transmitting packets to a network and does not disclose or suggest the specific manner for determining the transmission time.

Still further, **Boyce** does not disclose or suggest the division means, as recited in claim 3, for dividing each frame data into the packets such that a payload size of a transmitted UDP packet corresponds to a value obtained by subtracting an IP header size and a UDP header size from an Ethernet maximum transfer unit; and the number of UDP packets divided from a K-th frame corresponds to a value obtained by dividing a data size, in bytes, of the K-th frame by the payload size, in bytes, of the transmitted UDP packet. The Office Action cites column 8, lines 65-66 and column 9, lines 35-39 of **Boyce** for disclosure of these features.

Boyce discusses setting the maximum packet size for Internet Protocol (IP) transmission to the Ethernet Maximum Transport Unit (MTU) (see column 8, lines 65-67), and discusses that a maximum packet size is equal to the Ethernet MTU size minus the number of packet header bytes used (column 9, lines 38-39). However, **Boyce** does not specifically disclose subtracting an IP header size and a UDP header size from an Ethernet maximum transfer unit.

In view of the above remarks, it is respectfully submitted that neither **Yano et al.** nor **Boyce**, whether taken alone or in combination, disclose, suggest or render obvious the invention recited in claims 2 and 3. Reconsideration and withdrawal of rejection under §103 are respectfully requested.

CONLUSION

In view of the foregoing amendments and accompanying remarks, it is submitted that all pending claims are in condition allowance. A prompt and favorable reconsideration of the rejection and an indication of allowability of all pending claims are earnestly solicited.

If the Examiner believes that there are issues remaining to be resolved in this application, the Examiner is invited to contact the undersigned attorney at the telephone number indicated below to arrange for an interview to expedite and complete prosecution of this case.

In the event that any fees are due in connection with the filing of this paper, please charge any fees to Deposit Account No. 50-2866.

Respectfully Submitted,

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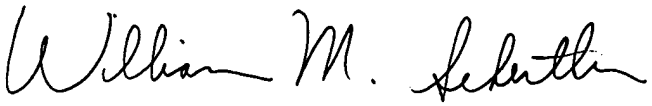

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